

REMARKS

This application pertains to a novel multilayer film useful as a packaging material.

Claims 1-23 are pending.

Claim 1 has been amended to refer to the "base layer" as an --outer base layer--. Support can be found in the sequence of layers at page 3, where in the first line of text, layer A) is shown as an outer layer.

Claims 1-4, 7, 13-15 and 18 stand rejected under 35 U.S.C. 102(b) as anticipated by Hanada et al. (US 2003/0186039).

Applicants' claims, as amended, pertain to a multilayer film having the following sequence of layers:

- A) an **outer base layer** of polyolefin foam containing 2.1 to 20% by weight of at least one nucleating agent,
- B) a layer formed of at least one polyolefin of the foam layer A), C-E) optional layers,
- F) a coupling agent layer (=bonding layer) and
- G) a heat sealable and/or peelable **surface** layer

wherein the total thickness of layer A) and B) is in a range of from 0.5 to 2 mm and the thickness of layer B) is in a range from 1/6 to 1/2 of the thickness of layer A).

According to this claimed invention the multilayer film has the following characteristics:

- 1.) An outer base layer A) which, as an outer base layer, is a surface layer;
- 2.) This outer base layer A) contains a certain amount of nucleating agent, namely 2.1 to 20% per weight of the nucleating agent;
- 3.) A layer B) formed of polyolefin (without any nucleating agent);
- 4.) A layer G, as a heat sealable and/or peelable **surface layer**;
- 5.) The total thickness of layers A) and B) – not of all layers of the inventive multilayer film – is in a certain range and
- 6.) The thickness of layer B) is only in the range of a certain part of the thickness of layer A).

These characterizing features of the claimed invention cannot be found anywhere in US200310186039 (Hanada), as set forth in the following distinctions:

The inventive multilayer film has an outer base layer (=substrate layer) formed of polyolefin foam which is covered on **one surface** with a **sequence** of layers B), F) and G) whereby G) is the surface layer of the multilayer film. Consequently none of the figures la-d of the Hanada's reference shows the inventively claimed multilayer film.

Figure la respectively **ld** shows a base layer of foamed material, however the sequence of layers B), F) and G) is not present. Even if one assumes that in figure la the non-foamed layer is layer B) of the claimed multilayer film, it is respectfully pointed out that according to the claimed invention layer B) is never a surface layer. Moreover, as set forth in [0064], figure ld is characterized by a surface layer which is "a so called essential non-foamed layer". According to the disclosure of the Hanada reference such layers always contain 40 to 100 parts per weight based on 100 parts per weight of a polyolefin resin **of a filler**. Such a high amount of filler renders a surface layer neither sealable nor peelable.

One further important difference between the figure 1a respectively 1d and the present invention is of course that the non-foamed polyolefin layer of figure 1a always contains at least 40 parts per weight of a filler. Layer B) never contains any filler.

A further important difference between the claimed multilayer film and the film disclosed in the Hanada's reference is of course that the (amended) claimed inventive multilayer film contains in layer A), formed of a foamed material, 2.1 to 20% of nucleating agent. As the examiner emphasizes that according to [0120] only one part per weight of nucleating agent is added for the production of foamed polyolefin resins the Hanada reference does not anticipate the claimed invention even if only for this difference alone.

Finally it must be emphasized that according to [0073] the ratio of the thickness of the foamed layer to the essential non-foamed layer is preferably within the range of from 100:1 to 100:30, whereas according to the claimed invention the ratio of the foamed layer A) to the non-foamed layer B) is 6:1 to 2:1. This means that this inventive feature – in addition to the other differences – is also not met by the Hanada reference. The examiner is further not correct when he refers to the total thickness of foamed layer and non-foamed layers because according to the claimed invention only the total thickness of layers A) and B) is of relevance and the thickness ratio between A) and B) but not any thickness ratio of the foamed layer to all other layers of the claimed multilayer film.

In summarizing the differences between the claimed invention and that of the Hanada reference it is clear that the structure of the multilayer film, the amount of nucleating agent and its dosing in different layers, the thickness ratio between the foamed layer and the essential non-foamed layer and the composition of the foamed layer and the non-foamed layers are different. Therefore the Hanada reference can not possibly anticipate the claimed invention.

The rejection of claims 1-4, 7, 13-15 and 18 under 35 U.S.C. 102(b) as anticipated by Hanada et al. (US 2003/0186039) should therefore now be withdrawn.

Claims 16 and 24 stand rejected under 35 U.S.C. 103(a) as obvious over Hanada et al. (US 2003/0186039).

The differences between Applicants novel multilayer film and anything that can be found in the Hanada reference have been discussed above. The use of Hanada's film for the purposes alleged by the Examiner does not overcome any of the differences discussed above.

The rejection of claims 16 and 24 under 35 U.S.C. 103(a) as obvious over Hanada et al. (US 2003/0186039) should therefore now be withdrawn.

Claims 5, 6 and 19 stand rejected under 35 U.S.C. 103(a) as obvious over Hanada et al. (US 2003/0186039) as applied to claim 1 above, and further in view of Hatke et al. (U.S. 6,239,187).

By checking the Hanada reference one can see that the mechanical properties and thermoformability improvement is achieved by laminating the foamed sheet with a non-foamed layer having a filler amount in the range of 40 to 100 parts per weight, based on 100 parts per weight of the polypropylene resin, and by using a polypropylene resin for the non-foamed layer having a melt tension within the range of from 1 to 20g. If these requirements are not fulfilled, especially if a different polypropylene with a different melt tension is used, this improvement of the mechanical properties is not achieved as shown in comparison example with the related results set forth in table 1 on page 10 of the reference.

Contrary to the teaching of Hanada, according to the present invention a considerable improvement of the mechanical properties of the multilayer film can be achieved by adding a certain amount of nucleating agent to the foamed polyolefin layer and an improvement of up to 15% of the production speed of trays built from the inventive multilayer films could be achieved. Therefore according to the present invention, the improvement of the mechanical properties is based on a different principle,

namely on adding a certain amount of nucleating agent to the foamed layer and not to the non-foamed layer as in Hanada. In addition a higher production speed the quality standard of the product is achieved by Applicants' invention.

Hanada, of course, is completely silent about any improvement of the production cycle.

These improvements and consequently the claimed invention cannot be derived in any way by combining the Hanada reference with the Hatke reference (US6239187).

First of all the Hatke reference concerns a foam production of a certain polymer namely **a cycloolefin** copolymer. Of course Applicants are not claiming a cycloolefin copolymer. Applicants' are only claiming polyolefin and in no way cycloolefin copolymers. Therefore a person skilled in the art would not combine the Hanada reference with the Hatke reference because it deals with different polymers of which the foamed layers are prepared.

Furthermore the main problem to be solved with the present invention, was to provide a multilayer film which could be formed on the automatically working packaging machines which allow for a high production speed. This is achieved with the presently modified multilayer film. However in the US patent 6239187 there is no hint disclosed, that this problem, namely allowing a higher production speed, can be achieved with a multilayer film, wherein the foamed layer is modified with a certain amount of nucleating agent. This is also a reason why a person skilled in the art would not have combined the Hanada reference and the Hatke reference in order to solve this problem set forth above.

Those skilled in the art would never combine these two references. One requirement according to Hanada is to have a light weight material, whereas by combining the teaching of the two references, one would not obtain a light weight product, but would instead obtain a heavy weight one, because the foamed layer as well as the essential non-foamed layer would contain a considerable amount of nucleating agent.

Last but not least US patent 6239187 concerns only the provision of a material with a higher heat distortion resistance together with a simultaneous good chemical and hydrolysis resistance. As already mentioned before, there is no hint disclosed that the known foamed material (Hatke reference) allows a higher speed of production on packaging machines – the problem solved by the present invention –. Therefore those skilled in the art would never have combined the teaching of these two US references without, of course, the use of hindsight reconstruction arrived at by first being aware of the present invention.

The rejection of claims 5, 6 and 19 under 35 U.S.C. 103(a) as obvious over Hanada et al. (US 2003/0186039) as applied to claim 1 above, and further in view of Hatke et al. (U.S. 6,239,187) should accordingly now be withdrawn.

Finally, claims 8-12, 17 and 20-23 stand rejected under 35 U.S.C. 103(a) as obvious over Hanada et al. (US 2003/0186039) as applied to claim 1 above, and further in view of Laurent et al (U.S. 6,132,539).

The Examiner relies on the Laurent reference for additional layers, or for the use of a film on form-fill-seal machines.

None of the additional layers referred to by the Examiner, or the use of form-fill-seal machines could possibly overcome any of the differences disclosed above between Applicants' novel multilayer films and anything that can be derived from the Hanada reference.

The rejection of claims 8-12, 17 and 20-23 under 35 U.S.C. 103(a) as obvious over Hanada et al. (US 2003/0186039) as applied to claim 1 above, and further in view of Laurent et al (U.S. 6,132,539) should therefore now be withdrawn.

In view of the present amendments and remarks it is believed that claims 1-23 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicant requests that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account No. 14-1263.

Respectfully submitted,
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